

direct vertical piles, with a smooth, almost hemispherical crown and strongly striate, slanting root often almost equaling the height of the crown and tapering to a subtruncate tip 0.8–1 mm wide. The cavity left in the bone by detached teeth is deeper than that in *P. marylandica*, with more strongly grooved sides, and the striated inner ring is not at all elevated; the central area is perforate in all the cavities visible in the specimen.

*Type*.—U.S.N.M. no. 16134, collected on shore of Chesapeake Bay close to and just south of the wharf at Plumpoint, Calvert County, Md., August 13, 1939, by Doris H. Blake. Probably from the Calvert formation of the Miocene, the best developed formation in the vicinity of Plumpoint.

BOTANY.—*Miscellaneous new American grasses*.<sup>1</sup> JASON R. SWALLEN, U. S. Bureau of Plant Industry.

During the identification of various collections of grasses in the past few years, the following species were found to be new, three of which are from the United States, i.e., *Poa fibrata*, *Stipa diegoensis*, and *Digitaria albicoma*.

***Chusquea sulcata* Swallen, sp. nov.**

Culmi graciles ramis floriferis fasciculatis adscendentibus 10–25 cm longis; vaginae internodiis longiores, glabrae, in ore hispidae marginibus ciliatis; ligula 0.5 mm longa, truncata; laminae 6–12 cm longae, 4–6 mm latae, acuminatae, glabrae marginibus sparse papilloso-hispidis; paniculae 4–10 cm longae, 5–10 mm latae, densae, ramis brevibus appressis; axis pubescens; glumae minutae obtusae enerves; lemmata sterilia obtusa vel subacuta, obscure 1–5-nervia, 2.5–3 mm longa; lemma fertile 6–7 mm longum, subacuminatum, obscure 7-nerve, exaristatum, glabrum; palea lemma aequans, sulcata, carinis approximatis pubescentibus, marginibus latis; antherae 4 mm longae.

Culms slender, probably clambering, the flowering branches in rather small ascending fascicles, 10–25 cm long; sheaths longer than the internodes, glabrous on the back, hispid in the throat, the margins ciliate; ligule about 0.5 mm long, truncate; blades 6–12 cm long, 4–6 mm wide, acuminate, narrowed toward the base, glabrous, sparsely papillose-hispid on the margins; panicles 4–10 cm long, 5–10 mm wide, rather dense, the short branches appressed, floriferous to the base, the axis glabrous or obscurely scabrous on the angles; glumes minute, obtuse, nerveless; sterile lemmas obtuse or subacute, apiculate, 1–5-nerved, the lateral nerves often obscure,  $\frac{1}{3}$  to  $\frac{1}{2}$  as long as the floret; lemma 6–7 mm long, subacuminate, obscurely 7-nerved, awnless, glabrous; palea as long as the lemma, sulcate, the keels close together, pubescent, the broad glabrous margins enclosing the flower; anthers 4 mm long.

Type in the U. S. National Herbarium, no. 1722000, collected on Mount Orlando, Chiapas, Mexico, April 1936, by E. Matuda (no. 321).

This species superficially closely resembles *C. nelsoni* Scribn., which has shorter and broader blades, pubescent panicle axis, larger glumes, acuminate, sterile lemmas, and strongly nerved, sparsely pilose, fertile lemma.

<sup>1</sup> Received October 26, 1939. All drawings by Mrs. Frances C. Weintraub.

**Chusquea longifolia** Swallen, sp. nov.

Rami floriferi dense fasciculati adscendentes 20–60 cm longi; laminae 12–25 cm longae, 6–12 mm latae, marginibus scabris; paniculae 10–16 cm longae, angustae ramis gracilibus appressis paucifloris scabris; spiculae 12–13 mm longae appressae; glumae obtusae, enerves, prima 0.5 mm secunda 1 mm longa; lemma sterile primum 7–9 mm longum, 9-nerve, acutum, apiculatum, basi latum; lemma sterile secundum lemma fertile aequans, 9-nerve, acuminatum, superne scabrum; lemma fertile 11–12 mm longum, obscure nervosum, puberulum, acuminatum, minute bifidum, aristatum, arista 2–4 mm longa; palea lemmate fertili paulo longior, carinis approximatis, bidentata, marginibus latis.

Main culm about 5 mm thick (in flowering part) the flowering branches fascicled, ascending, 20–60 cm long; blades 12–25 cm long, 6–12 mm wide with scabrous margins; panicles 10–16 cm long, narrow, the slender branches appressed, scabrous, few-flowered; spikelets 12–13 mm long, appressed; glumes obtuse, nerveless, the first 0.5 mm long, the second 1 cm long; first sterile lemma 7–9 mm long, 9-nerved, acute, mucronate, very broad at the base; second sterile lemma as long as the fertile one, 9-nerved, acuminate, scabrous toward the tip; fertile lemma 11–12 mm long, obscurely nerved, puberulent, acuminate, minutely bifid, with an awn 2–4 mm long; palea as long as or a little longer than the lemma, bidentate, the keels approximate, the margins very broad, incurved.

Type in the U. S. National Herbarium, no. 1724503, collected on Mount Tacana, Chiapas, Mexico, altitude 2,000–4,088 meters, in August 1938, by E. Matuda (no. 2373).

**Poa fibrata** Swallen, sp. nov.

Perennis, rhizomatosa; culmi rigidi, erecti vel basi adscendentes, 15–35 cm alti, glabri vel scaberuli; vaginae inferiores tenues, lucidae, undulatae, fibrosae, glabrae, superiores internodiis longiores, firmae, scabrae; ligula 1–1.5 mm longa acute vel obtusa; laminae 4–8 cm longae vel supreme reductae firmissimae, conduplicatae, curvatae, scabrae, marginibus minute serratis; panicula 4–10 cm longa, densa, ramis brevibus appressis ad basin floriferis vel basi nudis, scabris; spiculae 3–4 florum, 5–6 mm longae; glumae acutae vel subobtusae, 1–3-nerve, prima 2–3 mm longa, secunda 3 mm longa; lemmata 2.5–3 mm longa, acuta vel subobtusa, glabra vel scabra vix pubescentia; palea subacuta, lemma subaequans; antherae 2 mm longae.

Perennial with slender, creeping rhizomes; culms 15–35 cm tall, rigid, erect from an ascending base, glabrous or scaberulous; lower sheaths thin, smooth and shining, undulate, becoming more or less fibrous with age, the upper sheaths longer than the internodes, firm, scabrous; ligule 1–1.5 mm long, acute or subobtuse; blades 4–8 cm long, or the uppermost sometimes reduced, very firm, conduplicate, curved, pungent, scabrous, the margins minutely serrate; panicle 4–10 cm long, dense, with short appressed branches floriferous to the base, or the lower ones sometimes naked at the base, scabrous; spikelets 3–4-flowered, 5–6 mm long; glumes acute or subobtuse, 1–3-nerved, the first 2–3 mm long, the second 3 mm long; lemmas 2.5–3 mm long, acute or subobtuse, glabrous or scabrous, sometimes rather obscurely pubescent near the base and on the margins; palea subacute, about as long as the lemma or a little shorter.

Type in the U. S. National Herbarium, no. 1646953, collected in a dry subsaline flat, 2 miles south of Grenada, Shasta Valley, Siskiyou County, Calif., altitude 2,600 feet, June 30, 1935, by Louis C. Wheeler (no. 3629).

***Poa mulleri* Swallen, sp. nov.**

Perennis; culmi caespitiosi erecti 25–40 cm alti, compressi; foliae prope basin congestae; vaginae carinatae glabrae, eae culmorum elongatae; ligula 0.5 mm longa, membranacea, truncata; laminae innovationum laxae, elongatae, involutae, eae culmorum planae, 3–6 cm longae, 1–2 mm latae, glabrae; paniculae 5–8 cm longae pyramidatae; rami solitarii vel bini, graciles, flexuosi, reflexi, ad 3 cm longi, basi nudi; spiculae biflorae, 4 mm longae; gluma prima 3 mm longa, 3-nervis, acuta, navicularis; gluma secunda 3.5 mm longa, 5-nervis, abrupte acuta; lemma inferius 3.5 mm longum, 5-nerve, acutum, carina et nervis marginalibus inferne pubescentibus; palea lemmate paulo brevior; antherae 2 mm longae.

Perennial; culms loosely cespitose, 25–40 cm tall, erect from an ascending base, conspicuously flattened; leaves mostly crowded toward the base of the culms; sheaths compressed keeled, glabrous, those of the culm elongate; ligule 0.5 mm long, truncate; blades of the innovations lax, elongate, involute, those of the culm flat, 3–6 cm long, 1–2 mm wide, glabrous; panicles 5–8 cm long, pyramidal, the branches solitary or in pairs, slender, flexuous, reflexed, the lower ones as much as 3 cm long, naked in the lower half; spikelets clustered on the upper half of the branches, appressed, short pediceled, 2-flowered; glumes navicular, the first 3 mm long, 3-nerved, the second 3.5 mm long, 5-nerved, usually rather abruptly acute; lower lemma 3.5 mm long, 5-nerved, acute, sparingly pubescent on the keel and marginal nerves toward the base; palea a little shorter than the lemma; anthers 2 mm long.

Type in the U. S. National Herbarium, no. 1645320, collected in pine woods on the Peak of Cerro Potosi, Municipio de Galeana, Nuevo Leon, Mexico, July 21, 1935, by C. H. Muller (no. 2251).

The very flat culms with short reflexed panicle branches are characteristic.

***Stipa linearis* Swallen, sp. nov.**

Perennis; culmi graciles, dense caespitiosi, erecti, 50–75 cm alti, 2-nodes; foliae ad basin dense congestae; vaginae culmorum elongatae internodiis breviores, subplanae, glabrae, eae innovationum breves, angustae; ligula



Fig. 1.—*Stipa linearis*, mature floret,  $\times 1$ , and the body of the lemma,  $\times 5$ .

brevissima vel ad 3 mm longa; laminae culmorum 3–10 cm longae, planae vel involutae, eae innovationum ad 35 cm longae, 1–1.5 mm latae, planae vel subinvolutae, infra glabrae supra scaberulae, marginibus scabris; panicula ad 13 cm longa, angusta, ramis gracilibus, appressis, paucifloris, 1–3.5 cm longis; glumae aequales 5 mm longae, acutae, prima 3–5-nervis, secunda 5-nervis; lemma 4–4.5 mm longum, fuscum, sparse pilosum; callum 0.5 mm longum, hebes, dense barbatum; arista 2 cm longa, bigeniculata.

Perennial; culms slender, densely cespitose, erect, 2-noded, 50–75 cm tall,

the numerous leaves of the innovations crowded toward the base in a dense cluster; culm sheaths elongate, shorter than the internodes, becoming almost flat, glabrous, those of the innovations short, narrow; ligule very short in the innovations, 1.5–3 mm long on the culm leaves; culm leaves 3–10 cm long, flat or involute, those of the innovations as much as 35 cm long, 1–1.5 mm wide, flat or subinvolute, glabrous below, scaberulous above, the margins scabrous; panicle up to 13 cm long, narrow, the slender appressed, few-flowered branches 1–3.5 cm long; glumes equal, 5 mm long, acute, green, hyaline toward the tip, the first 3–5-nerved, the second a little broader, always 5-nerved; lemma 4–4.5 mm long, abruptly narrowed to the asymmetrical summit, dark brown, sparsely pilose with pale or brownish hairs; callus 0.5 mm long, blunt, densely barbate; awn 2 cm long, somewhat obscurely twice geniculate.

Type in the U. S. National Herbarium, no. 1610598, collected in Diente Canyon, 12 miles south of Monterrey, Nuevo Leon, Mexico, July 13, 1933, by C. H. Muller (no. 433).

This species is closely related to *Stipa augustifolia* Hitchc., which is a smaller plant, 10–30 cm tall, with short involute blades and longer glumes and lemma.

#### *Stipa acuta* Swallen, sp. nov.

Perennis; culmi graciles caespitosi, erecti, ad 95 cm alti; vaginae internodiis breviores, glabrae; ligula 1.5–2 mm longa vel eae innovationum brevissimae; laminae involutae ad 23 cm longae, firmae, glabrae, marginibus scabris; paniculae longe exsertae, 15–20 cm longae, laxae, ramis gracilibus, adscendentibus vel divergentibus, basi nudis, paucifloris, ad 6 cm longis; spiculae appressae; glumae acutae, hyalinae, reticulatae, basi purpurascetes, prima 11–12 mm longa, 5-nervis, secunda 9–10 mm longa, 5–7-nervis; lemma 7 mm longum, fusiforme, fuscum, pilosum pilis albis appressis; callum 1 mm longum, pungens, dense pilosum; arista 4–4.5 mm longa, bigeniculata.

Perennial; culms slender, tufted, erect, about 95 cm tall; sheaths shorter than the internodes, glabrous; ligule 1.5 to 2 mm long, or very short on the innovations; blades involute as much as 23 cm long, firm, glabrous with scabrous margins; panicles long exserted, 15–20 cm long, lax, the slender ascending or spreading, somewhat flexuous glabrous branches naked at the base—usually in the lower half, few-flowered, as much as 6 cm long; spikelets appressed, the pedicels 2–5 mm long; glumes acute, hyaline, reticulate veined, tinged with purple at least toward the base, the first 11–12 mm long, 5-nerved, the second 9–10 mm long, 5–7-nerved; lemma 7 mm long, fusiform, very dark brown, rather densely appressed-pilose with white hairs; callus 1 mm long, sharp pointed, densely appressed pilose; awn 4–5 cm long, twice geniculate, scabrous, the terminal segment slender, somewhat flexuous, 3–3.5 cm long.

Type in the U. S. National Herbarium, no. 1760238, collected on rocky soil on Carneras Pass, 21 miles south of Saltillo, Coahuila, Mexico, September 1, 1938, by Forrest Shreve (no. 8545).

*Stipa acuta* is most closely related to *S. eminens* Cav., which has narrower, 3-nerved, acuminate glumes, a pale lemma 5–6 mm long, and a somewhat shorter awn.

#### *Stipa diegoensis* Swallen, sp. nov.

Perennis; culmi densi caespitosi, erecti, 70–100 cm alti, scaberuli, infra nodos densi pubescentes; vaginae inferiores internodiis longiores, superiores internodiis breviores, elongatae, glabrae vel scaberulae; ligula 1–2 mm longa,

obtusa vel truncata, ciliata, pubescens; laminae 15–40 cm longae, 2–4 mm latae, planae vel involutae, attenuatae, infra scaberulae, supra pubescentes; panicula 15–30 cm longa, densa, angusta, ramis appressis ad 10 cm longis; gluma prima 9–10 mm longa, 1-nervis, acuminata; gluma secunda 8–9 mm longa, 3-nervis, acuminata; lemma 6.5–7.5 mm longum, pilosum, pilis supremis 1–2 mm longis; callum 0.5 mm longum, curvatum, pungens, pilosum; arista 2–3.3 cm longa, bigeniculata, scabra; palea 4 mm longa, acuta, pilosa; antherae 4 mm longae, purpurascens.

Perennial; culms densely tufted, erect, 70–100 cm tall, scaberulous, densely pubescent below the nodes; lower sheaths longer than the internodes, the upper ones shorter than the internodes, elongate, glabrous or scaberulous; ligule 1–2 mm long, obtuse or truncate, ciliate, pubescent; blades 15–40 cm long, 2–4 mm wide, flat or involute, scabrous on the lower surface, pubescent on the upper; panicle 15–30 cm long, narrow, dense, the



Fig. 2.—*Stipa diegoensis*, mature floret,  $\times 1$ , and the body of the lemma,  $\times 5$ .

branches appressed as much as 10 cm long; first glume 9–10 mm long, 1-nerved, acuminate; second glume 8–9 mm long, 3-nerved, acuminate; lemma 6.5–7.5 mm long, pilose, the hairs at the top of the lemma, 1–2 mm long; callus 0.5 mm long, curved, sharp-pointed, appressed pilose; awn 2–3.3 cm long, bigeniculate, scabrous; palea 4 mm long, acute, pilose; anthers 4 mm long, purple.

Type in the U. S. National Herbarium, no. 1761177, collected along vernal stream in chaparral, Proctor Valley near Jamul, San Diego County, Calif., May 23, 1938, by Frank F. Gander (no. 5778).

This species is apparently related to *S. editorum* Fourn., which is a much more slender plant, glabrous below the nodes and has thinner glumes, the second 1-nerved or obscurely 3-nerved, a shorter lemma 5–6 mm long, and a more slender obscurely geniculate awn.

#### *Stipa bracteata* Swallen, sp. nov.

Perennis; culmi ad 125 cm alti, caespitiosi, erecti, 3-nodos, infra nodos dense retrorse pubescentes, infra paniculam bracteatae; vaginae internodiis breviores inferne pubescentes, in ore sparse pilosae; ligula 1.5–3 mm longa; laminae 25–40 cm longae, 1–3 mm latae, planae vel involutae, infra glabrae, supra pubescentes; panicula 35–42 cm longa, laxa, fasciculis ramorum remotis; rami graciles 4–10 cm longi adscendentes vel divergentes, basi nudi; spiculae appressae; glumae acuminatae, hyalinae, 3-nerve, prima 10–11 mm longa, secunda 8–9 mm longa; lemma 5.5–6.5 mm longum, fusiforme,

fuscum, pilosum pilis albis appressis; callum 0.5 mm longum, curvatum, dense barbatum; arista 20–24 mm longa, bigeniculata, glabra.

Perennial; culms as much as 125 cm tall, erect, tufted, 3-noded, densely retrorsely pubescent below the nodes, with a conspicuous ciliate bract 4–6 mm long below the panicle; sheaths shorter than the internodes, pubescent near the base, sparsely pilose at the throat, those of the innovations densely pubescent on the collar; blades 25–40 cm long, 1–3 mm wide, flat or involute, glabrous on the lower surface, pubescent on the upper; panicle 35–42 cm long, lax, the branches in small remote fascicles, 4–10 cm long, some long and some short in the same fascicle, slender, ascending or spreading, naked at the base, the longer ones usually spikelet bearing only near the ends; spikelets appressed; glumes acuminate, hyaline, 3-nerved, the first 10–11 mm long, the second 8–9 mm long; lemma 5.5–6.5 mm long, fusiform, brown, pilose with white appressed hairs; callus 0.5 mm long, somewhat curved, rather blunt, densely barbate; awn 20–24 mm long, bigeniculate, glabrous or nearly so, the two lower segments twisted, the upper straight.

Type in the U. S. National Herbarium, no. 1721797, collected on grassy flats 25 miles north of Ensenada, Baja California, April 4, 1931, by Ira L. Wiggins (no. 5153).

*Stipa bracteata* is related to *S. editorum* and *S. diegoensis* but is at once distinguished by the conspicuous bract below the panicle.

#### *Digitaria albicoma* Swallen, sp. nov.

Perennis; culmi caespitosi, erecti, 65–71 cm alti, simplices vel basi ramosi; vaginae inferiores internodiis multo longiores, dense villosissimae, superiores elongatae internodiis breviores, glabrae vel ad basin papilloso-pilosae;

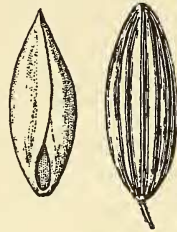


Fig. 3.—*Digitaria albicoma*, spikelet and fruit,  $\times 5$ .

ligula 1.5–2 mm longa, truncata; laminae planae, 10–30 cm longae, 3–5 mm latae, pilosae vel papilloso-pilosae, marginibus scabris; panicula longe exserta; racemi 5–9, graciles, adscendentes vel divergentes, 8–12 cm longi basi nudi; spiculae 2.5-mm longae, solitariae vel binae, inferior subsessilis, superior pedicello scabro 2 mm longo; gluma prima obsoleta; gluma secunda angusta 3-nervis, glabra, marginibus hyalinis; lemma sterile lemma fertile aequans, subobtusum, 5–7-nerve, glabrum, marginibus hyalinis; fructus 2.5–2.8 mm longus, acutus, plumbeus.

Perennial; culms caespitose, erect, 65–75 cm tall, simple, or branched at the base; lower sheaths much shorter than the internodes, densely villous, the upper ones elongate but shorter than the internodes, glabrous or papillose-pilose toward the base; ligule 1.5–2 mm long, truncate; blades flat, 10–30 cm long, 3–5 mm wide, pilose or papillose-pilose, the margins scabrous; panicle long exerted; racemes 5–9 slender, ascending or spreading, 8–12 cm long, naked at the base; spikelets 2.5 mm long, solitary or paired, the lower

one subsessile, the upper pedicellate, the pedicel 2 mm long, scabrous; first glume obsolete or nearly so; second glume narrow, 3-nerved, glabrous, the margins hyaline; sterile lemma as long as the fruit, 5-7-nerved, glabrous, the margins hyaline; fruit 2.5-2.8 mm long, acute, lead-colored.

Type in the U. S. National Herbarium, no. 1761179, collected in low open sandy woods, Chinsegut Hill Sanctuary, Brooksville, Hernando County, Fla., November 18, 1938, by Jason R. Swallen (no. 5644).

*Digitaria albicoma* is closely related to *D. subcalva* Hitchc., which has many noded culms decumbent at the base and sometimes rooting at the lower nodes, less conspicuously villous sheaths, and fewer appressed racemes.

#### **Mesosetum comatum** Swallen, sp. nov.

Perenne; culmi graciles, erecti, 50 cm alti; vaginae internodiis longiores, glabrae, in ore pilosae, marginibus minute ciliatis; laminae 4-6 cm longae, 2-2.5 mm latae, superiores et eae innovationum reductae, firmae, erectae, pungentes, infra glabrae, supra glabrae vel hispidae, marginibus sparse hispidis; gluma prima 3.5 mm longa, obtusa, basi hirsuta pilis ad 4 mm longis, in parte superiore scabra; gluma secunda 3 mm longa, 3-nervis, basi pilosa, superne glabra, marginibus breviter ciliatis; lemma sterile 4 mm longum, acutum, marginibus ciliatis pilis 2-2.5 mm longis, quam pilis glumae secundae crassioribus; lemma fertile 3.8-4 mm longum, minute striatum.

Perennial; culms slender, erect, about 50 cm tall; sheaths as long as or longer than the internodes with a small tuft of hairs in the throat and a pubescent line on the collar, the back glabrous, the margins finely ciliate; ligule about 0.2 mm long, ciliate; blades 4-6 cm long, 2-2.5 mm wide, the uppermost culm blades and those on the innovations much reduced, firm, erect, pungent, involute toward the tip, the lower surface glabrous, becoming hispid toward the tip, the upper surface glabrous or hispid, the margins sparsely papillose-hispid; raceme 7 cm long, erect; spikelets appressed; first glume 3.5 mm long, obtuse, obscurely keeled, not greatly narrowed toward the base, hirsute across the lower part, some of the hairs as much as 4 mm long, sparsely hirsute on the midnerve to the middle, the upper dorsal portion scabrous; second glume 3 mm long, 3-nerved, the tip rounded, glabrous on the back, pilose toward the base, the margins evenly appressed ciliate nearly to the summit; sterile lemma 4 mm long, acute, the margins densely ciliate, the hairs 2-2.5 mm long, coarser than those on the second glume; fruit 3.8 mm long, minutely striate.

Type in the U. S. National Herbarium, no. 1721241, collected at San Ignacio, Cerro Piedras, Province of Misiones, Argentina, March 10, 1914, by Rodriguez (no. 31). This specimen was communicated by L. R. Parodi, Buenos Aires, Argentina.

*Mesosetum comatum* resembles *M. loliiforme* (Hochst.) Chase, which is a stoloniferous plant with smaller appressed pilose spikelets, the sterile lemma not conspicuously fringed.

#### **Panicum abscissum** Swallen, sp. nov.

Perenne; culmi densi caespitosi, 55 cm alti, compressi; vaginae inferiores carinatae, 3-4 mm latae (e carina ad marginem), truncatae, ad basin culmorum congestae, superiores longiores, internodiis breviores, auriculatae; ligula curtissima; laminae 15-25 cm longae, 1-2 mm latae, condensatae, firmae, curvatae vel flexuosae, infra glabrae supra scaberulae; paniculae terminales et axillares, 7-15 cm longae, ramis adscendentibus vel appressis, paucifloris, ad 10 cm longis; pedicelli 1-4 mm longi appressi; spiculae 2.8-3

mm longae; gluma prima 1.6–2 mm longa, 3-nervis, acuta, carina scabra; gluma secunda et lemma sterile aequalia, 5-nervia, subobtusata, glabra; fructus 2.2–2.3 mm longus, 0.5 mm latus, acutus, pallidus, nitens.

Perennial; culms densely cespitose, 50–70 cm tall, compressed; lower sheaths keeled, somewhat crowded, 3–4 mm wide from keel to margin, one side of the sheath sometimes 5–8 mm longer than the other, truncate or extended at the summit into short, very broad, obtuse auricles, the upper sheaths much longer than the lower but much shorter than the internodes, the auricles not so prominent; ligule membranaceous, very short; blades 15–25 cm long, 1–2 mm wide, conduplicate, firm, curved or flexuous, glabrous on the lower surface, scabrous on the upper; panicles terminal and axillary from all the nodes, long exserted, 7–15 cm long, the branches ascending or appressed; spikelets 2.8–3 mm long; first glume 1.6–2 mm long, 3-nerved, acute, scabrous on the keel; second glume and sterile lemma equal,

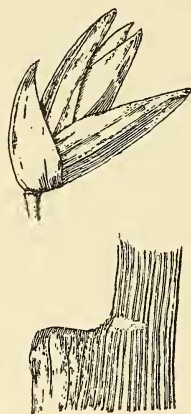


Fig. 4.—*Panicum abscissum*, spikelet and mouth of sheath,  $\times 5$ .

5-nerved, subobtusata, glabrous; fruit 2.2–2.3 mm long, 0.5 mm wide, acute, pale, smooth and shining.

Type in the U. S. National Herbarium, no. 1259952, collected in dry sand at tourist camp near lake, Sebring, Fla., October 3, 1925, by Paul Weatherwax.

*Panicum abscissum* belongs to the *Agrostoidea* group of *Panicum*. It is distinguished from all the other species of the group by the broad sheaths truncate at the summit, the firm flexuous blades, and the axillary panicles from all the nodes.

DISTRIBUTION: Sandy or swampy ground, central Florida. De Soto County: Sebring, *Weatherwax* in 1925 (type); Polk County: Winter Haven, *O'Neill* 5207, 5208; Florida, *Piper* in 1917.

#### *Panicum irregulare* Swallen, sp. nov.

Perenne; culmi 80 cm longi, prostrati, ramosi, radicanes, glabri; vaginae internodiis breviores vel superiores internodiis longiores, glabrae, in ore pubescentes; laminae 4.5–6.5 cm longae, 1–1.5 cm latae, ovato-lanceolatae, acuminatae, glabrae, marginibus albis; paniculae 16–17 cm longae, racemis 15 remotis adscendentibus 1–2.5 cm longis; spiculae biflorae, binae, 2–2.2 mm longae, prima sessilis, secunda pedicellata; gluma prima 0.7–1 mm longa, 1-nervis, acuta; gluma secunda et lemma flosculi primi subaequalia,



*acuta*, 5-nervia, glabra; palea flosculi primi 1.5 mm longa, hyalina; caryopsis libera; fructus 1.5 mm longus, acutus, lucidus.

Perennial; culms 80 cm long, prostrate spreading, ascending at the ends, branching, rooting at the lower nodes; sheaths shorter than the internodes or the upper ones a little longer than the internodes, glabrous, pubescent at the mouth; blades short pedicellate, 4.5–6.5 cm long, 1–1.5 cm wide, ovate-lanceolate, acuminate, with white cartilaginous margins; panicles 16–17 cm long with 15 rather remote ascending racemes 1–2.5 cm long; spikelets rather densely arranged on one side of the rachis, 2-flowered, paired, 2–2.2 mm long, spreading, the first sessile, the second pedicellate; first glume 0.7–1 mm long, 1-nerved, acute; second glume and lemma of the first floret similar, subequal, acute, 5-nerved; palea of first floret 1.5 mm long, hyaline; caryopsis free; fruit 1.5 mm long, acute, smooth and shining.

Type in the U. S. National Herbarium, no. 1644874, collected on stony river bank in the vicinity of El General, Province of San Jose, Costa Rica, altitude 760 meters, February 1939, by Alexander F. Skutch (no. 4115).

*Panicum irregulare* is related to *P. frondescens* Meyer, which has a denser, shorter panicle of more numerous racemes and larger spikelets 2.6–2.8 mm long with the lower floret sterile.

BOTANY.—*Arizona plants: New species, varieties, and combinations.*<sup>1</sup>

F. J. HERMANN, T. H. KEARNEY, and R. H. PEEBLES, U. S. Bureau of Plant Industry.

A paper on this subject appeared in this JOURNAL on November 15, 1939 (29: 474–492). A few additional novelties have since come to light, and they are published here in order to avoid publication of new names in a flora of Arizona, now in preparation.

*Juncus interior* Wieg. var. **arizonicus** (Wieg.) Hermann, comb. nov.

*Juncus arizonicus* Wieg., Bull. Torrey Bot. Club 27: 517. 1900.

*Juncus interior* Wieg. var. **neomexicanus** (Wieg.) Hermann, comb. nov.

*Juncus neomexicanus* Wieg., Bull. Torrey Bot. Club 30: 447. 1903.

Both *J. arizonicus* and *J. neomexicanus* possess the acuminate to aristate bracteoles of *J. interior*, which set this species off from its nearest allies. Intermediates are frequent between the two varieties here proposed and typical *J. interior*, but most material falls rather readily into one of the three forms and may be distinguished by the following key:

Perianth equaling the capsule, 3–4 mm long. . . . . *J. interior*  
 Perianth exceeding the capsule, 4–5 mm long.

Bracteoles lanceolate, acuminate; perianth-segments erect, rigid, lanceolate, their hyaline margins relatively narrow and opaque. . . .

. . . . . *J. interior* var. *arizonicus*

Bracteoles broadly ovate, acute to abruptly aristate; perianth-segments spreading, not rigid, broadly ovate, with broad transparent scarious margins and brown lateral bands bordering the green center. . . .

. . . . . *J. interior* var. *neomexicanus*

<sup>1</sup> Received February 1, 1940.